



Ivins City Wastewater Treatment Plant Feasibility



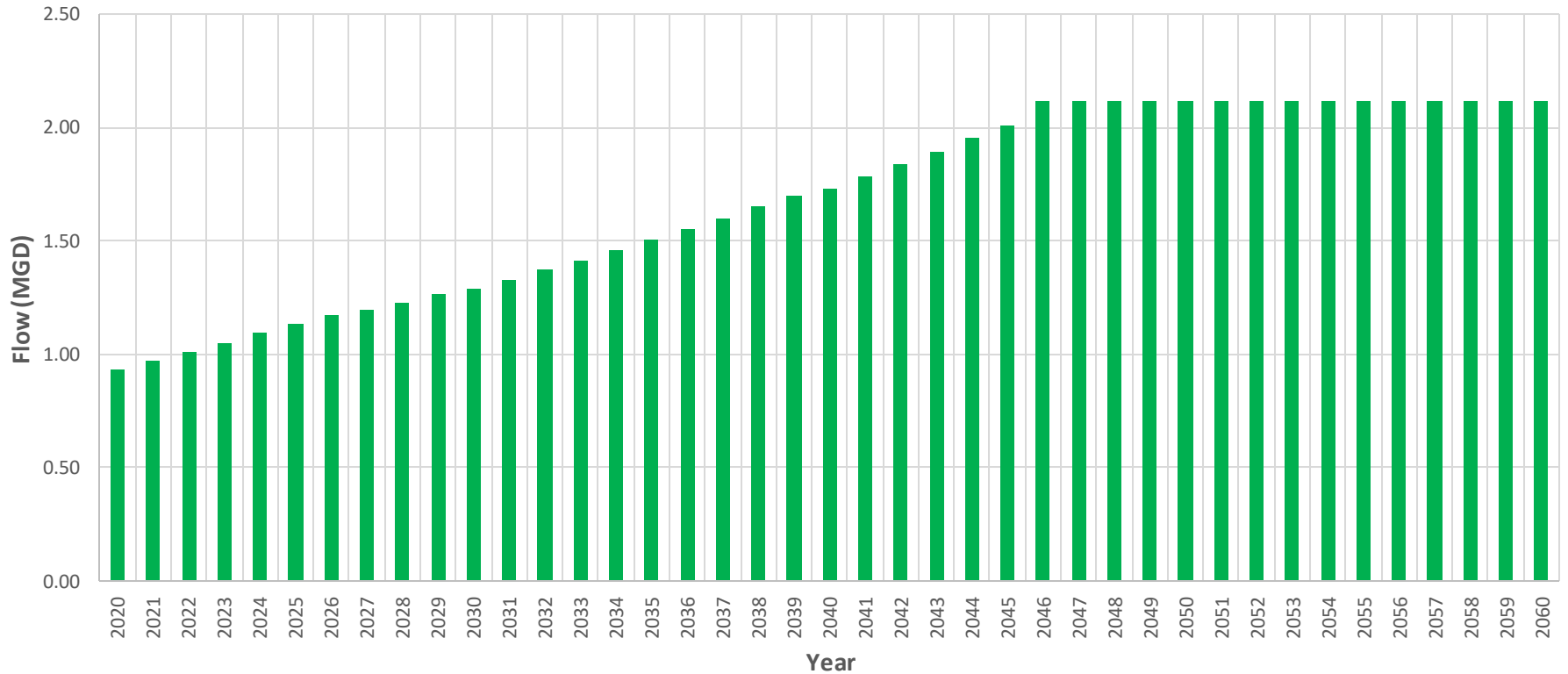
Presentation Overview

- Projected Growth and Wastewater Production
- Wastewater Treatment Alternatives
- Site Location Alternatives and Off-Site Improvements
- Sewer, Irrigation Water Unit Cost Comparison
- Capital and O&M Costs
- Impact Fees and User Rates
- Other Considerations
- Conclusions



Projected Growth of ERUs, Ivins City

Ivins City Projected Wastewater Flow



Wastewater Treatment Alternatives

- Conventional Activated Sludge/Oxidation Ditch
- Sequencing Batch Reactor
- Membrane Bioreactor
- Granular Activated Sludge (AquaNereda)



Wastewater Treatment Alternatives - Oxidation Ditch/CAS



Wastewater Treatment Alternatives - Sequencing Batch Reactor

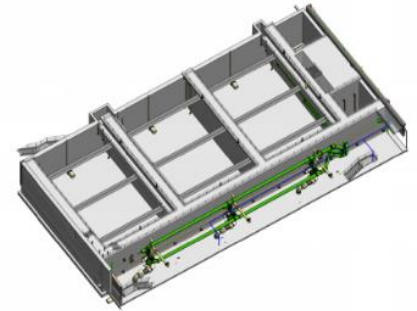
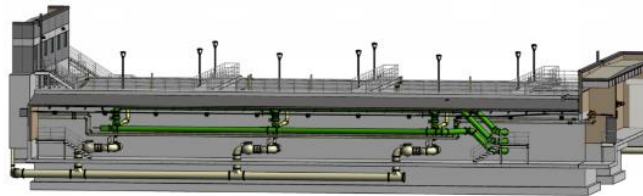
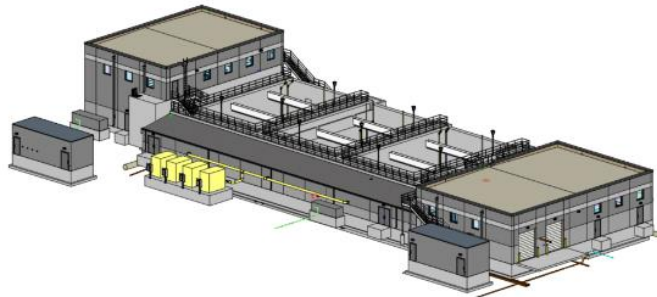


Wastewater Treatment Alternatives - Membrane Bioreactor

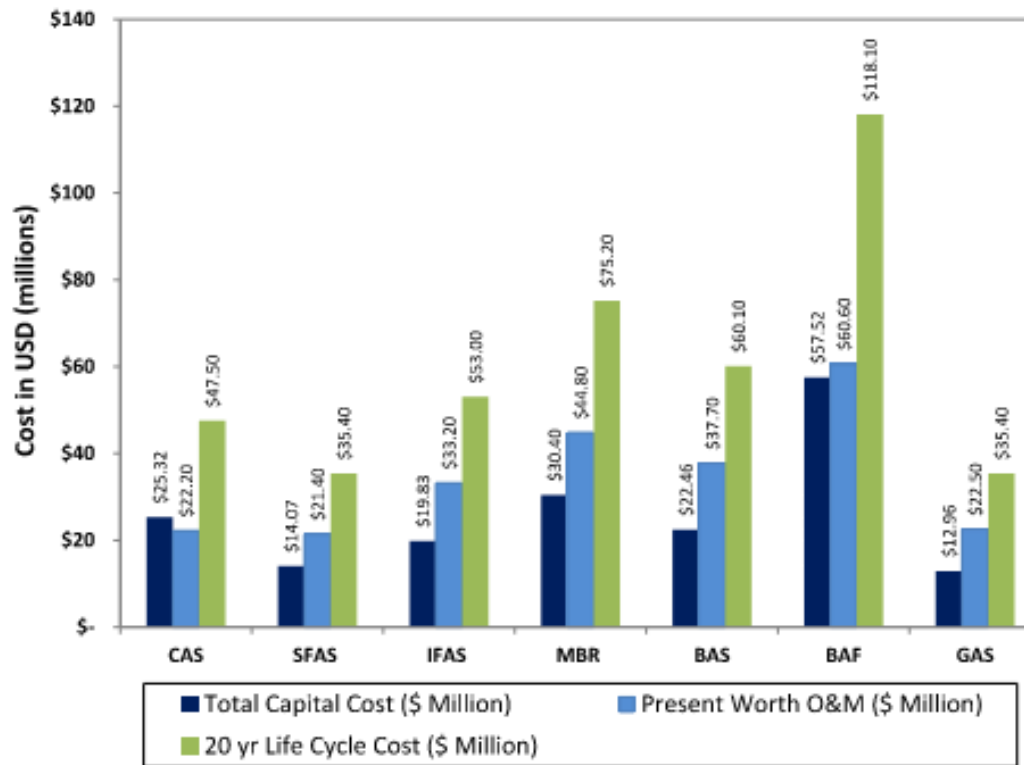


Wastewater Treatment Alternatives - Granular Activated Sludge

Facility 3D Views



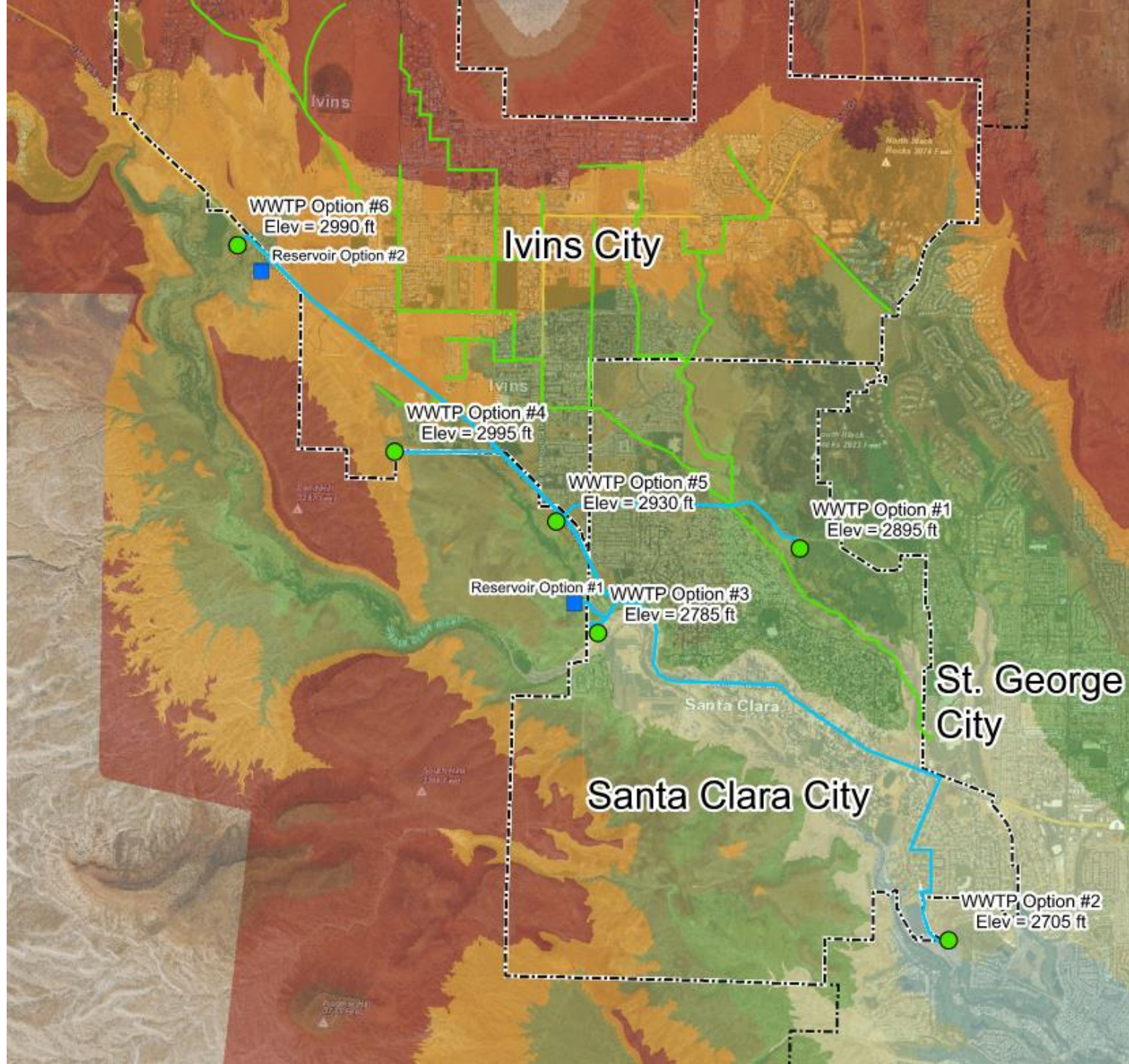
Cost Comparison Between Activated Sludge Processes - WEF



Site Location Alternatives and Off-Site Improvements

- Wastewater Treatment Plant
- Sewer lift station and force main
- Secondary water booster pump station and pipeline





Estimated Capital Costs for Treatment Plant Alternatives

WWTP Option	Reservoir Option	WWTP Capital Cost	Land Cost	Secondary Booster Pump Cost	Secondary Pipeline Cost	Sewer Lift Station Cost	Sewer Lift Station Pipeline Cost	Total Cost	% from Low
1	1	\$25,440,000	\$500,000	\$0	\$2,124,000	\$1,902,000	\$468,000	\$30,434,000	2.88%
	2	\$25,440,000	\$500,000	\$585,000	\$3,348,000	\$1,902,000	\$468,000	\$32,243,000	9.00%
2	1	\$25,440,000	\$500,000	\$628,000	\$3,438,000	\$0	\$1,026,000	\$31,032,000	4.90%
	2	\$25,440,000	\$500,000	\$1,255,000	\$5,670,000	\$0	\$1,026,000	\$33,891,000	14.57%
3	1	\$25,440,000	\$500,000	\$433,000	\$342,000	\$1,902,000	\$1,116,000	\$29,733,000	0.51%
	2	\$25,440,000	\$500,000	\$801,000	\$2,790,000	\$1,902,000	\$1,116,000	\$32,549,000	10.03%
4	1	\$25,440,000	\$0	\$0	\$1,782,000	\$1,902,000	\$1,944,000	\$31,068,000	5.02%
	2	\$25,440,000	\$0	\$433,000	\$2,106,000	\$1,902,000	\$1,944,000	\$31,825,000	7.58%
5	1	\$25,440,000	\$350,000	\$0	\$846,000	\$1,902,000	\$1,044,000	\$29,582,000	0.00%
	2	\$25,440,000	\$350,000	\$433,000	\$2,070,000	\$1,902,000	\$1,044,000	\$31,239,000	5.60%
6	1	\$25,440,000	\$500,000	\$0	\$2,988,000	\$1,902,000	\$3,150,000	\$33,980,000	14.87%
	2	\$25,440,000	\$500,000	\$433,000	\$324,000	\$1,902,000	\$3,150,000	\$31,749,000	7.33%

Sewer, Irrigation Water Unit Cost Comparison

- St. George City Wastewater Treatment = \$1.67/1000 gallons
- WCWCD Secondary Irrigation = \$0.85/1000 gallons
- **Combined Unit Cost = \$2.52/1000 gallons**

- Proposed Wastewater Treatment Options to Treat and Produce Secondary Irrigation Water
 - AquaNereda Wastewater Treatment Cost = \$2.13/1,000 gallons
 - Sequencing Batch Reactor Treatment Cost = \$2.25/1,000 gallons
 - Membrane Bioreactor Treatment Cost = \$2.50/1,000 gallons

- Lift Station Cost = \$0.10/1,000 gallons
- **Combined AquaNereda Wastewater Treatment Cost = \$2.23/1,000 gallons**



Forecasting Long-Term Treatment Costs

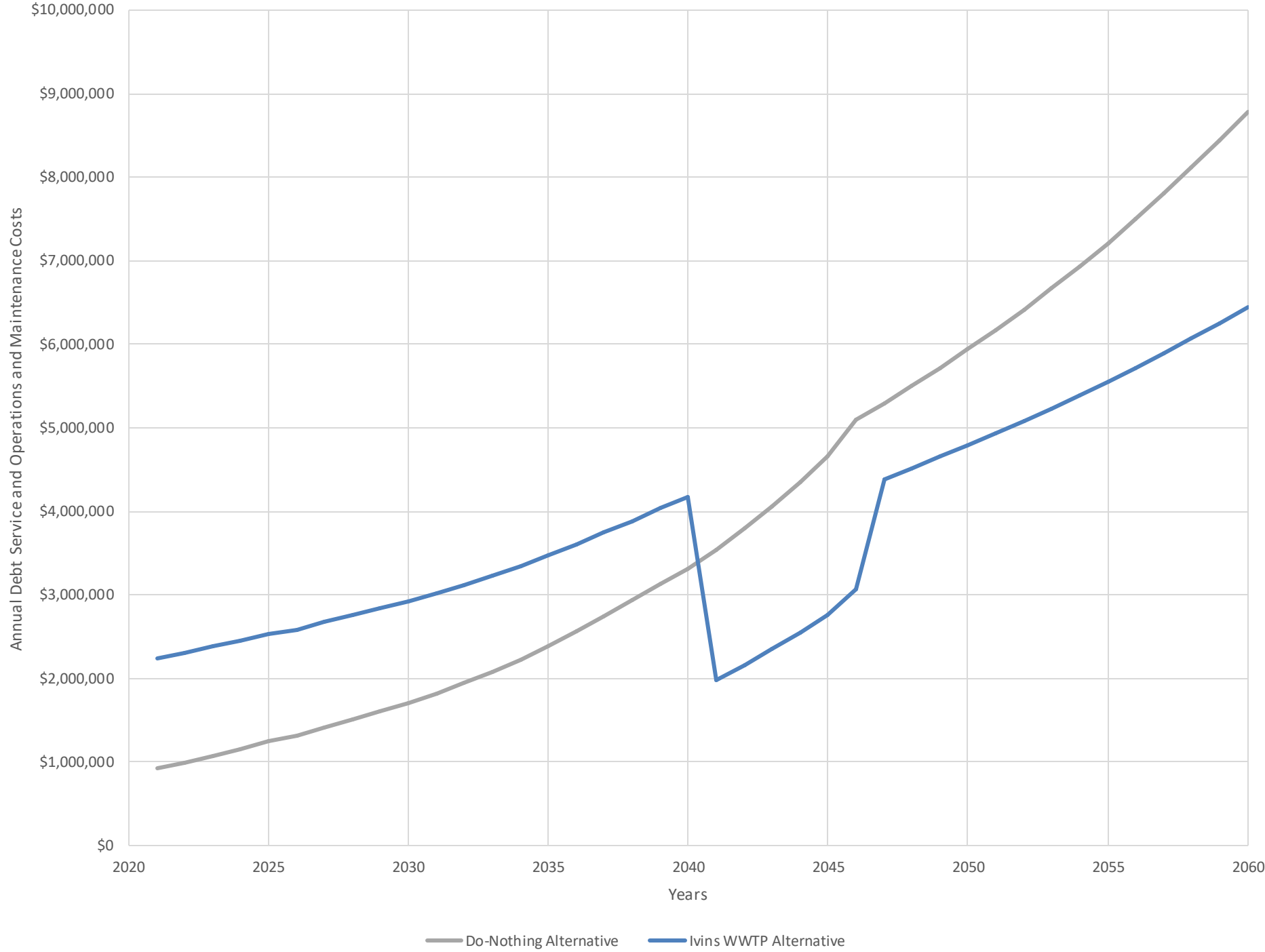
- Wastewater Treatment Costs estimated to increase over time at 3%
- Cost to purchase secondary irrigation water from WCWCD estimated to increase over time at 5%
- Additional cost of \$250,000 set aside annually (adjusted for inflation) to cover replacement costs
- Assumed 20-year bond to fund capital improvement at 3% annual interest rate

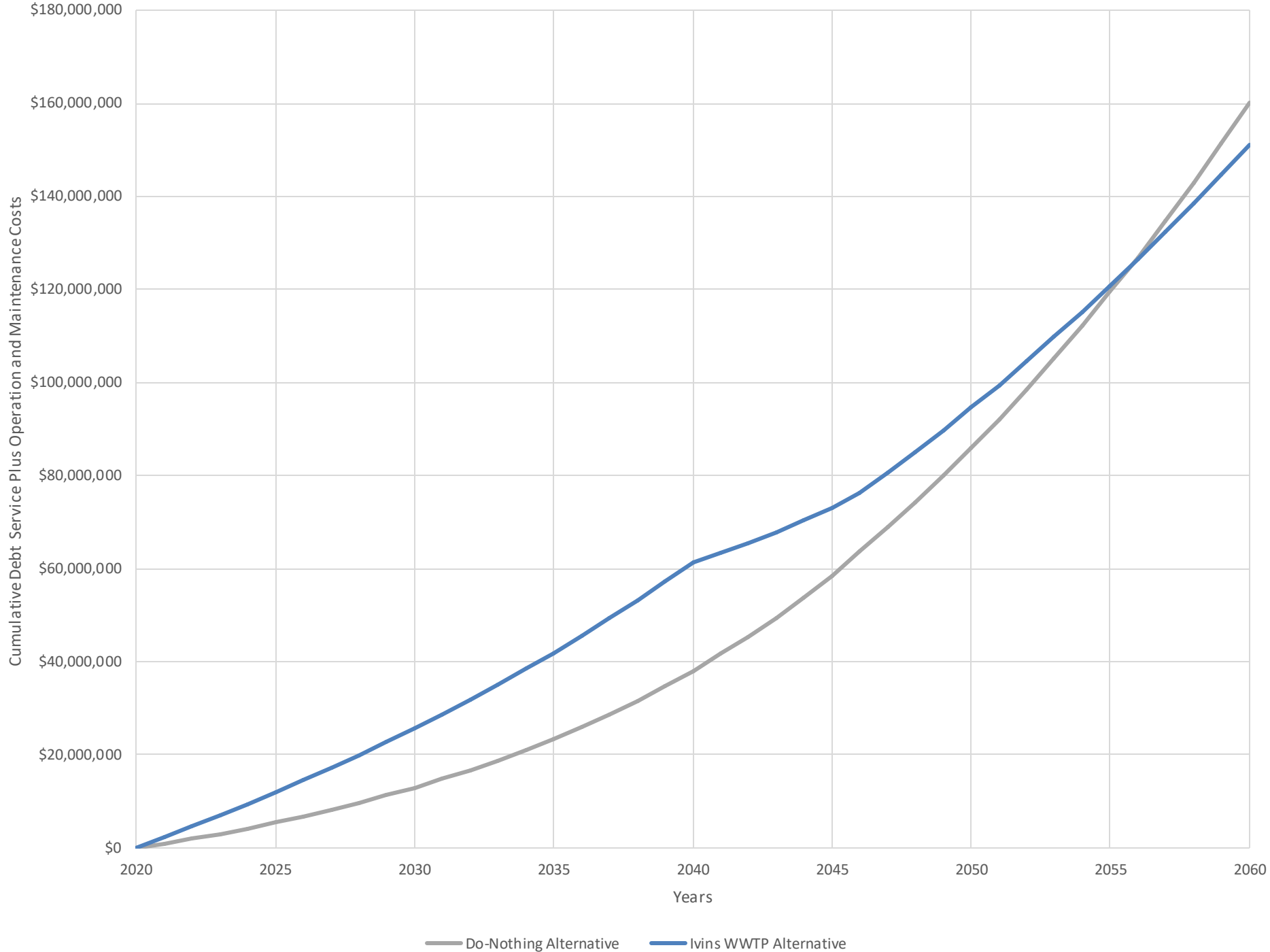


Estimated Adjustment to Impact Fees

Component of WWTP Facility	% Attributable to New Growth	Impact Fee Eligible Cost (\$MM)	Non Impact Fee Eligible Cost (\$MM)
Secondary Irrigation and Reuse	100%	\$5.8	\$0
Primary Wastewater Treatment	54.3%	\$12.9	\$10.9
Total Project	63.0%	\$18.7	\$10.9

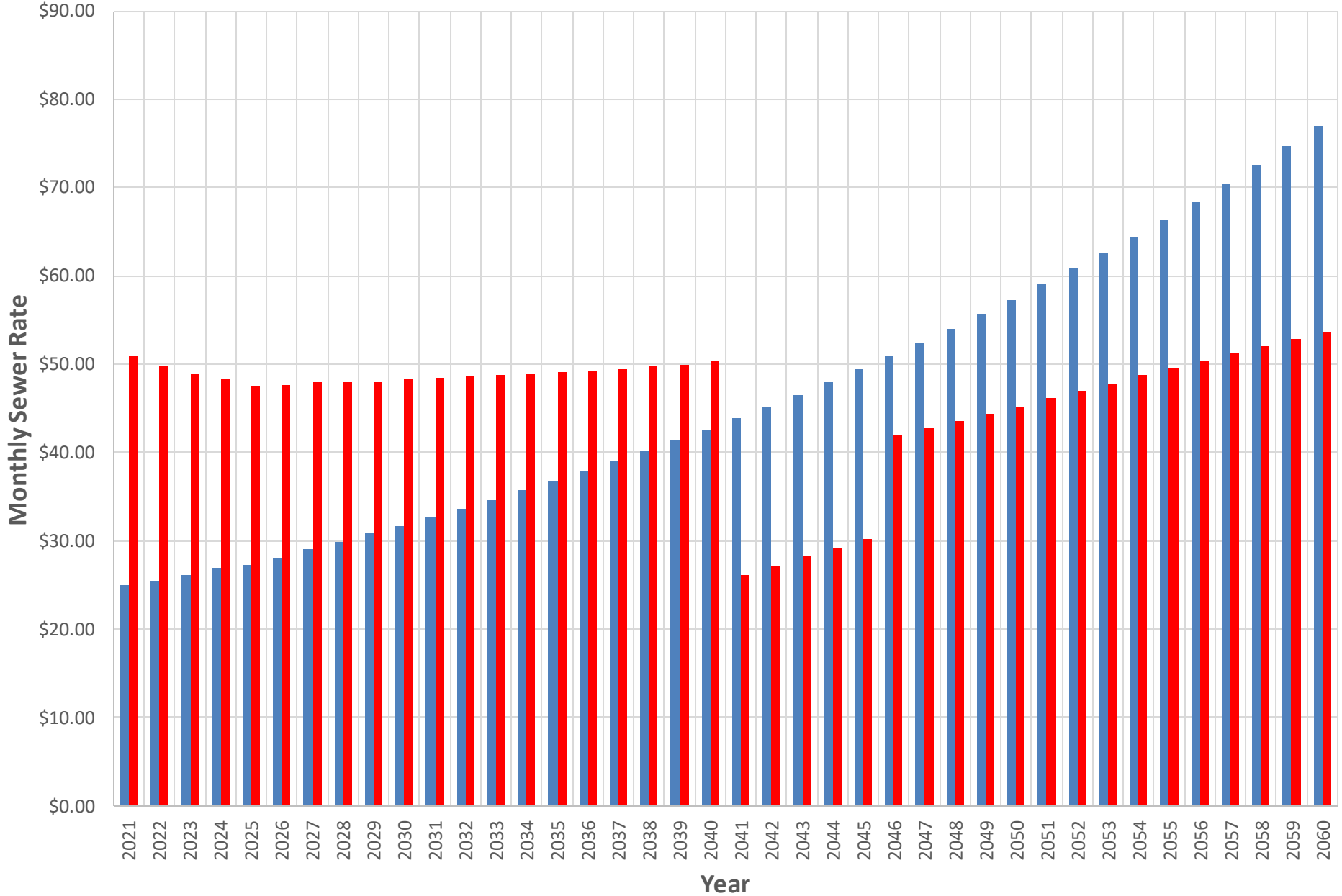
Impact Fee Components	Existing Fees	Proposed Fees	Difference (Proposed – Existing)
Sewer Impact Fee			
Sewer Impact Fee (Ivins)	\$650	\$650	
Proposed Treatment Plant Fee	\$0	\$4,026	
Regional Sewer Impact Fee (St. George)	\$1,379	\$0	
Sewer Impact Fee Subtotal =	\$2,029	\$4,676	\$2,647
Water Impact Fee			
Culinary/Secondary Water Impact Fee (Ivins)	\$3,800	\$3,800	
WCWCD Impact Fee (Source)	\$10,400	\$5,304	
Secondary Water Source Impact Fee (Ivins)	\$0	\$1,817	
Water Impact Fee Subtotal =	\$14,200	\$10,921	-\$3,279
Total Combined Impact Fee =	\$16,229	\$15,597	-\$632





Estimated Sewer Rate per ERU through 2060

■ Do-Nothing Alternative ■ Ivins WWTP Alternative



Other Considerations

- Increased Reliability of Water Sources
- Visual Impacts
- Foul Odors



Conclusions

- Based on assumptions made, the project appears to be viable, but is a long-term investment.
- Analysis is sensitive to the assumptions made, especially estimated rate increases for secondary irrigation water.
- Additional work is needed to refine financing options.

